Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Petitions for Rulemaking to Amend the	)	GN Docket No. 12-354
Commission's Rules Regarding the Citizens	)	RM-11788
Broadband Radio Service in the 3550-3700	)	RM-11789
MHz Band	)	

REPLY COMMENTS OF VIVINT WIRELESS, INC.

Vivint Wireless, Inc. ("Vivint") submits these reply comments ("Reply") to the Petitions for Rulemaking submitted by CTIA and T-Mobile USA, Inc. on June 16, 2017 and June 19, 2017, respectively.[1]

I. INTRODUCTION

The intense interest from a diverse group of approximately one hundred commenters validates the Federal Communications Commission ("FCC") decision to create rules for the 3550-3600 MHz ("3.5 GHz") Citizens Broadband Radio Service ("CBRS") that break from the status quo and facilitate an environment that protects incumbent federal spectrum users while simultaneously encouraging new entrants to experiment with new technology and business models.[2] Vivint applauds the FCC's accomplishment in reaching this carefully crafted outcome that represents a win-win for all parties involved.

As discussed in greater detail below, the comments filed in the instant proceeding on balance do *not* support revisions to the rules proposed by T-Mobile and CTIA that would heavily favor cellular incumbents over new technology entrants. In particular:

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1 *See Public Notice*, DA 17-609 (rel. June 22, 2017).

2 See 47 C.F.R. Section 96.1 *et seq.* See also, *Amendment of the Commission's Rules with Regard to Commercial Operations of the 3550-3650 MHz Band*, GN Docket No. 12-354, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959 (2015) ("*3.5 GHz Order*"); *Amendment of the Commission's Rules with Regard to Commercial Operations of the 3550-3650 MHz Band*, GN Docket No. 12-354, Order on Reconsideration and Second Report and Order, 31 FCC Rcd 5011 (2016) ("*3.5 GHz Order on Reconsideration*").

Priority Access Licenses ("PALs") should remain census tract-based. Contrary to the arguments of certain commenters, the resulting number of licenses will not burden the FCC or Spectrum Access System ("SAS") administrators, nor will it discourage investment in the 3.5 GHz band. However, enlarging the geographic license area for PALs, whether to Partial Economic Areas ("PEAs") or to a county-based scheme, would result in inefficient spectrum use and an unnecessary barrier to entry for new service providers given that national cellular carriers would likely capture most of the larger and commensurately costlier geographic licenses.

The term for a PAL license should remain three (3) years with the option to renew for an additional three (3) year term. Extending the term to ten (10) years with the expectation of perpetual renewal will again favor national cellular carriers and hinder the innovation and flexibility the FCC hopes to foster in 3.5 GHz spectrum. Further, the time between winning a PAL and starting operations will be much shorter than the launch for other previously auctioned licenses because standards and devices for General Authorized Access ("GAA") operation should already exist by the time a PAL auction commences.

The FCC should retain the 70 megahertz limit on PALs licenses. The FCC struck the appropriate balance between PALs and GAA assignments in the current rules. Repurposing the entire band for PALs would have a long-lasting chilling effect on future investment by technology interests and new entrants in FCC initiatives that involve creative, out-of-the-box thinking to manifest.

Finally, Vivint urges the FCC to consider under this proceeding certain discrete rules to ensure that commercial radar services in the adjacent 3500-3550 MHz band and CBRS services can successfully co-exist.

II. DISCUSSION

A. PALs Should Remain Geographically Based on Census Tracts

The FCC's decision to use census tracts as the basis for PALs geographic licenses remains the best option for promoting innovation and encouraging new entrants to participate in the forthcoming auction, and will not prevent national cellular carriers from aggregating licenses to extend their network footprints across larger geographic areas if desired. Vivint urges the FCC to retain census tracts and reject proposed alternative approaches.

Certain commenters express support for a PALs license framework with larger geographic licenses. Specifically, T-Mobile and other cellular interests reaffirm support for a PEA-based scheme arguing that census tract license areas will be administratively burdensome and discourage investment and asserting that spectrum partitioning and disaggregation will ensure spectral efficiency in a PEA scheme.[3] Charter Communications alternatively proposes a county-based system arguing that the FCC has already found county-based licensing areas to be feasible, and that such a scheme would "not be so large as to create a barrier for new entrants."[4]

Vivint respectfully disagrees with these alternative approaches to geographically partitioning PALs licenses. Managing approximately 70,000 licenses does not represent an undue burden on the FCC or licensees given the meaningful advances in database management, cloud computing and other IT technologies and engineering systems in recent years. As Google illustrates in its comments, Sprint and its subsidiary Clearwire by themselves have successfully assembled and manage a nationwide network involving 30,000 Broadband Radio Service and Educational Broad Service licenses that involve diverse geographic license areas, technical

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[3] *See, e.g.,* Comments of T-Mobile USA, Inc. ("T-Mobile"), GN Docket No. 12-354 at 4-5 (filed July 24, 2017); Comments of AT&T Services, Inc. ("AT&T"), GN Docket No. 12-354 at 6-9 (filed July 24, 2017) ("AT&T Comments").

[4] Comments of Charter Communications, Inc. ("Charter Communications"), GN Docket No. 12-354 at 3 (filed July 24, 2017).

parameters and spectrum rights.[5] Moreover, the complexity of running an auction for census tract-based licenses represents a far less complex task relative to the multi-step 600 MHz "reverse" auction the FCC just concluded, and there are well-known online auctioneers that handle millions of transactions every day.[6]

Contrary to the assertions of cellular interests, a census tract level auction will improve, not harm spectrum efficiency. Making CBRS licenses available at the census tract level lowers the barrier for entry to participate in the bidding process for discrete licenses, and improves the probability that new entrants will actually put the spectrum to use.

Vivint, for example, plans to initially target urban/suburban areas with single family homes and a limited choice for fixed high speed broadband (*e.g.* 50-100Mbps). These are often areas where the only good choice for broadband service is the incumbent cable provider because the DSL provider has limited broadband coverage and options (*e.g.* <50Mbps) and no fiber overbuilder in the area. Vivint's challenge will be providing primary fixed wireless access using 3.5 GHz spectrum that is equivalent to or better than cellular broadband service quality -- consumers expect a much higher reliability of service for fixed wireless than cellular/mobile wireless.

Vivint expects to acquire PALs to ensure the provision of a high quality and reliable high-speed broadband service and to opportunistically use GAA to boost the service offering as needed. This differs from cellular carriers that rely on their low and other mid-band spectrum to provide basic service and will opportunistically use 3.5 GHz to augment those services. If PEA or even county areas are adopted for PALs, competitors like Vivint will acquire spectrum for populations for which it has no near term plans to provide service. As a result, customers may bear the brunt

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[5] *See* Comments of Google and Alphabet Access ("Google"), GN Docket No. 12-354 at 24 (filed July 24, 2017) ("Google Comments").

[6] Auctioneer ebay.com has in excess of 800 million items for sale at any given moment. *See* https://www.ebayinc.com/ebay20/ (last visited August 4, 2017).

of larger geographic licenses since they will effectively cover the cost of spectrum that will not be used to serve them. It also means spectrum would not be used as efficiently because a PAL holder could prevent others from getting access. Even if PAL holders are allowed to lease unused spectrum on the secondary market, this could result in inefficient spectrum use because entities seeking rights to use spectrum from PAL holders will need to cover the spectrum management costs of a PAL holder that should not occur with direct acquisition. For these reasons, and given the large amount of interest from other new entrants that may have geographically focused service offerings that are not county level or larger, more expansive license areas will likely stifle disruption and innovation.

The lack of willingness to innovate by large cellular carriers – which ask for more of the same – should not impede the opportunity for new businesses to create and offer new services. If large cellular carriers actually need to have PAL over a whole PEA, which seems doubtful for augmenting small cell capacity deployment, then they have the ability and resources to aggregate. As noted above, Clearwire was able to aggregate and manage 2.5 GHz spectrum licenses. The FCC should maintain its existing census tract service area size and support innovation as opposed to creating an entry barrier for new entrants offering high-speed broadband options for consumers.

Further, as Open Technology explained in its comments, "[a]uctioning PALs as large as Partial Economic Areas, or even counties, will make the licenses prohibitively expensive for smaller and more locally-focused wireless providers (*e.g.*, WISPs) seeking to offer service to smaller, more targeted areas. WISPs and other smaller operators do not have the capital or the economic business case to outbid national or regional wide-area cellular providers for licenses that often cover hundreds of square miles, millions of people, and/or very diverse areas including

urban, suburban, rural and small town communities. Providers seeking a license to offer service to a targeted area, such as a campus or shopping mall, would face a similar dilemma."[7]

B. Three (3) Year PAL Terms Will Promote Innovation and Auction Participation

Applying a conventional ten (10) year term with an expectation of renewal to PALs would be an evolutionary step backwards and would discourage new entrant participation in the auction. Not surprisingly, commenters expressing a preference for a ten (10) year license term are traditional cellular interests. These commenters recycle the tired argument that a three (3) year license term will create uncertainty and may hinder investment in the 3.5 GHz CBRS ecosystem.[8] The arguments of conventional cellular interests might have merit in the 1990s or 2000s where every wireless network involved tower deployed and high-power cellular base stations and the complementary infrastructure to service such transmitters. CBRS service, however, was never intended to support conventional cellular networks, and in fact, cannot support such use given the power and operating limitations imposed on the band in order to protect priority incumbent radar services. Instead, the 3.5 GHz band serves as an ideal home for small cell operations, where a buildout can occur quite expeditiously and equipment can be amortized within a three (3) year window. Given that standards and devices for GAA operation should already exist by the time a PAL auction commences, the time between winning a PAL and starting operations will likely be much shorter than the launch timeline for other previously auctioned licenses.

If the rules were changed to ten (10) years with an expectation of renewal, PALs would more closely resemble traditional cellular licenses, including the problems associated with such licenses. Specifically, with a ten (10) year license term, what mechanism would exist to discourage large operators from warehousing the spectrum instead of deploying service to

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[7] Comments of Open Technology Institute at New America and Public Knowledge ("Open Technology") GN Docket No. 12-354 at 20 (filed July 24, 2017) ("Open Technology Comments").

[8] *See, e.g.*, AT&T Comments at 4, arguing that "short license terms pose a risk that there will be insufficient time for licensees to recover their return on investment" which will discourage investment.

subscriber? The FCC should therefore proceed with its three (3) year license term to encourage innovative and flexible use of the band.

C. Commenters Overwhelmingly Support Retention of the Existing Balance Between GAA and PALs

The instant record reflects overwhelming support for retention of the current balance between PAL and GAA use, which includes a hard 70 megahertz limit on PAL spectrum at any given location and the ability of GAA devices to dynamically tune and opportunistically use the entirety of the 3.5 GHz band when not occupied by other higher priority users. Concurrently, vociferous opposition is reflected to T-Mobile's proposal to auction all 3.5 GHz. For example, Open Technology urges the FCC to "summarily reject" T-Mobile's "extreme proposal," which "would pull the rug out from under rural WISPs and the many innovative use cases and market entrants that are already well along in their plans to intensively use the band to meet a myriad of local needs.[9]

Meaningfully, even among other cellular interests, support is not extended for a rebalancing of interests in the 3.5 GHz band, with AT&T and others opting to avoid discussion of the issue altogether.

Given the strong support for retention of the current balance between PALs and GAA, Vivint urges the FCC to avoid creating any further confusion and to promptly reaffirm the status quo.

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[9] Open Technology Comments at 28; *see also*, Google Comments at 13, explaining that "[e]liminating dedicated GAA spectrum would reduce the utility of the CBRS band for an array of entities — ranging from WISPs to local businesses to venues that want to provide on-premises services— that have indicated their interest in using GAA rather than PAL spectrum;" Comments of Federated Wireless, Inc. ("Federated"), GN Docket No. 12-354 at 5 (filed July 24, 2017), describing how T-Mobile's "proposal would eviscerate the GAA tier, as the opportunistic use T-Mobile proposes would be insufficient to support the development of the GAA ecosystem envisioned by the Commission in the 3.5 GHz Order."

D. Vivint Supports Reasonable Interference Rules for High-Power Commercial Weather Radar Operating in Adjacent to CBRS

Vivint at this juncture also lends its support to the suggestion by the Wireless Innovation Forum ("WInnForum") that the FCC propose interference rules that will protect all CBRS stakeholders, including PAL and GAA users, from commercial weather radar systems licensed in the adjacent 3500-3550 MHz band. Under current rules, these high-power radar systems will pose challenges to CBRS operations, potentially causing base station shut down or damage or false positive detections by Environmental Sensor Capability ("ESC") detection networks, impacting operation of CBRS stations that rely on the ESC to mitigate interference into Department of Defense radars. As the WInnForum calls for, the FCC should create certainty for CBRS operations and commercial weather radars alike by adoption of the following:

1. Weather radars should include filters to protect against interference;
2. Weather radars should be licensed below 3540 MHz to provide a guard band;
3. Section 90.175 of the FCC's rules should be modified to require frequency coordination with ESC operators within 150 km of proposed radiolocation stations operating in the 3500-3550 MHz band; and
4. A neutral frequency coordination body should be established to conduct coordination.

III. CONCLUSION

The 3.5 GHz CBRS band represents a serious effort by the FCC to promote innovation. Accordingly, FCC rules for the band appropriately provide a technology agnostic framework that fosters diverse use cases instead of favoring one, as no one can reliably predict what use case may emerge in the future at this early juncture. Were the FCC to adopt the requested rule changes (enlarging license areas and adopting longer, perpetually renewable license terms), the rules would inevitably favor one particular use case – mobile cellular access. In a best case scenario such rule changes would lead to very high entrance barriers, detrimental to new entrants evaluating new

service and technology. In a worst case scenario the 3.5 GHz band could lay fallow for the foreseeable future.

For the foregoing reasons and those set forth in Vivint's comments in this proceeding, Vivint urges the FCC to reject the rule changes proposed by CTIA and T-Mobile.

Respectfully submitted,

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